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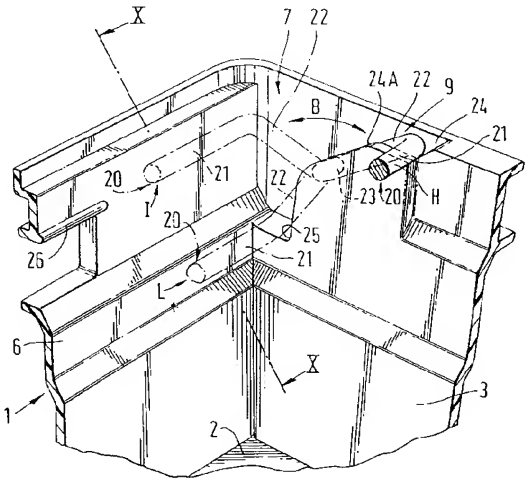
## (54) Container having means for stacking at three different levels

(57) An open topped container 1 has base supports 8 and 9 each of which consists of an upper U-shaped support bar 10 and a lower U-shaped support bar 11. The bars are pivotally mounted on opposed side walls 3 and 4 to be pivotal to a position in which they overlie the base 2 of the container or a position out of said overlying relationship. The support bars 10 and 11 can be selectively pivotted to provide column stacking of two similar containers or either of two depths for nest stacking those containers where the upper container is received within the lower container in a vertical column.

For column stacking the upper bars 10 are pivotted to overlie the base 3 to support an overlying container. For nest stacking the bars 10 are pivotted out of overlying relationship with the base 2 so that an overlying container can be nested in a shallow condition in which it is supported on the bars 11 or in a deep condition where the bars 11 are displaced out of overlying relationship with the base 2.

In an alternative embodiment each of the base supports 8 and 9 can be provided by a single pivotally mounted support bar.

FIG. 3.

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**Description**

## TECHNICAL FIELD & BACKGROUND ART

The present invention relates to an open topped container which can be assembled with several similar containers to form a vertical column in either a nested condition (where an overlying container is partly received within the container which underlies it so that bases of adjacent nested containers are relatively close together) or a stacked condition (in which adjacent containers in the column are supported so that their bases are relatively widely spaced). More particularly the invention concerns open topped containers having pivotally mounted base supports such as bars which are associated with the open top to extend between opposed side walls of the containers and be adjustable to one position in which they provide clearance through the open top for a similar container to be received for nesting and another position in which the supports are located and retained to support the base of an overlying container in column stacking. An example of an open topped container capable of nesting or column stacking by use of pivotal bars is disclosed in G.B. A-1,444,356.

The advantages of containers which are capable of both nesting and column stacking are well known in the art. Principally these are that the containers when empty can be assembled as a vertical column in a nested condition to minimise the space occupied by the containers (as is desirable for storage and transport) and the containers when full can be stacked as a vertical column (which is again convenient for storage and transport) while the base supports ensure that the contents of a container will not be compressed or otherwise damaged by overlying containers. However, with known open topped containers of this latter type it is frequently found that with several containers stacked as a column, the column occupies an amount of storage space which is not justified by the contents of the containers and it is an object of the present invention to provide an open topped container by which this disadvantage may be alleviated.

## STATEMENT OF INVENTION & ADVANTAGES

According to the present invention there is provided an open topped container comprising a base, opposed side walls extending upwardly from the base, and pivotally mounted base support means extending between the side walls, the base support means being selectively pivotal to a first position of adjustment in which they are out of overlying relationship with the base to provide clearance whereby a first of two similar containers can be received through the open top of the second container with its base support means in the first position to be nested in a deep condition in the second container, a second position of adjustment in which the base support means are supported in overlying relationship with the base whereby the said first container can be column stacked with its base supported on the base support means of the said second container with its base support means in the second position, and a third position of adjustment in which the base support means are supported in overlying relationship with the base whereby the said first container can be nested in a shallow condition in the said second container with the base of the first container supported on the base support means of the second container in the third position and in which shallow nested condition the base of the first container is spaced from the base of the second container to a greater extent than said spacing when said containers are in the deep nested condition and to a lesser extent than said spacing when said containers are column stacked.

The first and second positions of adjustment of the base support means in the container of the present invention will typically correspond to nesting and column stacking respectively provided between similar containers as are known, for example, by the disclosure in G.B. 1,444,356. However, the invention includes the further feature that the base support means is adjustable to a third position in which the upper of two containers assembled as a column can be supported on the base support means of the underlying container with the overlying container partially received within the underlying container in a shallow nested condition. In this latter condition the adjacent bases of the shallow nested containers are spaced to a greater extent than are the adjacent bases of two containers in a deep nested condition (where the base of the upper container is not supported on the base support means of the lower container). As a consequence, the depth to which the containers may be nested or stacked in erecting a vertical column can be selected as an option of at least three selections depending upon the space required for contents of the respective containers in the column.

As is usual for containers of the kind to which the present invention applies, the base and walls will usually be moulded in plastics with plastics or metal forming the pivotted base support means. The base support means will usually be in the form of bars, rods, bar-like components or flaps. It is also usual the container of the invention when in a deep nested, shallow nested or column stacked condition with a second similar container will have its base substantially parallel with the base of the second container. Generally the container will be provided with two base support means which are located one towards each end of the side walls. Typically the container will be of generally oblong rectangular parallelopipedon shape with the side walls extending over the longer extent and with a base support means provided towards each end of the container so that the support means provide symmetrical support to the base of an overlying container in a stack.

Similarly to the disclosure in G.B. 1,444,356, the base support means may comprise at least one substantially U-shaped support bar or rod having a back portion which extends between the opposed side walls and leg

portions which are mounted for pivotal movement about an axis on the side walls so that the support bar can be pivotted about said axis in effecting selective adjustment of the support bar means.

In a preferred embodiment the or each base support means comprises an upper support component and a lower support component which are pivotally mounted on the side walls to be independently pivotal between a first state in which they are supported to overlie the base and a second state in which they are out of overlying relationship with the base and which upper and lower components are arranged so that said first position of adjustment is provided when both the upper and lower support components are in their second state, said second position of adjustment is provided when the upper support component is in its first state for that support component to support the base of a second container in column stacking, and said third position of adjustment is provided when the upper support component is in its second state and the lower support component is in its first state for the lower support component to support the base of a second container in shallow nesting.

In a second embodiment the or each base support means comprises a single support component which is pivotally mounted on the side walls and selectively pivotal to a high state corresponding to said second position of adjustment, a low state corresponding to the third position of adjustment and a third state corresponding to the first position of adjustment. Preferably the single support component is maintained in its third state or its high state by abutment with a wall of the container and is movable passed the abutment by flexure (either by flexing of the abutment or flexing of the single support component) or by displacement of the pivotal mountings of the support component to permit the support component to be adjustable between the high state and the low state through the third state, between the third state and the low state through the high state, or between the high state and the third state through the low state as the case may be.

In a preferred arrangement of the second embodiment the pivotal mounting of the support component is displaceable relative to the side walls to permit that component to be movable between at least two of its first, second and third positions. The displacement of the pivotal mounting of the support component relative to the side walls is preferably effected by the ends of the support component being slidable in respective tracks on the side walls, such tracks conveniently being formed as slots in the side walls. Where the ends of the support component are slidable in tracks it is preferred that in each of the high, low and third states of that component its ends are at the same position in the tracks and at such position the tracks may include seatings within which the respective ends of the support component are received in a stable, relatively firm, manner when the support component is in each of its high, low and third states. It is also preferred to facilitate adjustment of the support component from one state to another that during such adjustment the support component abuts the side walls through cam faces at positions remote from the aforementioned tracks and during sliding movement of the ends of the support component in the respective tracks to a predetermined position, said abutment through the cam faces (possibly assisted by guidance from the ends of the support component in their respective tracks) promotes the support component to become located in at least one of its high, low or third states. Desirably the cam faces are arranged to promote location of the support component in the third state during displacement of the support component from the low state to the third state - this is to facilitate simple and convenient readjustment of the container from a shallow nesting condition to a deep nesting condition. Where the support component is in the form of the previously mentioned U-shaped bar or rod with its leg portions pivotally mounted on the side walls of the container with the ends of those leg portions displaceable along the aforementioned tracks, the side walls of the container may present the aforementioned cam faces remote from the tracks and with which cam faces the leg portions of the support bar slidably abut to provide the required promotion of the support bar to its high, low or third state.

Alternatively, or in addition, the leg portions of the support bar may present cam faces which slidably abut the side walls of the container (possibly abutting predetermined cam faces presented by those side walls) remote from the tracks to provide the required promotion of the support component to its high, low or third state. The support component can conveniently be formed as a plastics moulding and this is particularly advantageous where leg portions of that component are of a predetermined shape for edges thereof to present the aforementioned cam faces for abutment against the side walls.

Usually the container will have one or more end walls which extend between the opposed side walls. In the aforementioned third state, the single support component can conveniently abut an adjacent end wall.

Preferably the base support means is itself supported to be maintained in its second or third positions of adjustment by abutment of the base support means against shoulders or seatings presented by upstanding walls of the container.

It will be appreciated that the container of the present invention will have its upstanding walls appropriately tapered, splayed and/or stepped as is well known in the art to provide a required configuration for several similar containers to be nested in a vertical column.

## DRAWINGS

Two embodiments of an open topped container constructed in accordance with the present invention will now be described, by way of example only, with reference to the accompanying illustrative drawings in which:-

Figure 1 is a perspective view of a first embodiment in which the base support means is provided by two support bars at each end of the container;

Figure 2 is a scrap section taken on the line II - II of Figure 1;

Figure 3 is a perspective view showing part of the second embodiment in which the base support means is provided by a single support bar at each end of the container;

Figures 4, 5 and 6 are scrap sections taken on the line X - X of Figure 3 and respectively illustrate the single support bar in its positions for column stacking, deep nesting and shallow nesting with a second similar container;

Figure 7 is a similar view to Figure 5 and shows a possible modification;

Figure 8 is a perspective view similar to that shown in Figure 3 and shows a further modification of the second embodiment;

Figure 9 is a scrap section of the container in Figure 8 schematically illustrating the adjustment available for the single support bar at each end of the container, and

Figure 10 is a similar view to Figure 5 and shows a still further modification for the single support bar at each end of the container;

Figure 11 is a scrap section of a container similar to that shown in Figure 9 and illustrates a modification for the base support means shown in Figure 9;

Figure 12 is a scrap section of a container similar to that shown in Figure 11 and illustrates a still further modification for the base support means;

Figure 13 is a plan view of an end part length of the support bar in the base support means of Figure 12, and

Figure 14 is a side elevation of a leg on the support bar of Figure 13.

## DETAILED DESCRIPTION OF DRAWINGS

The containers 1 have a generally flat oblong rectangular base 2 upstanding from which are opposed longer side walls 3 and 4 and opposed end walls 5 and 6 which extend between the side walls. Usually the base and walls are formed as a plastics moulding. The walls 3 to 6 are stepped to diverge outwardly as they approach and form a rectangular open top 7 within which can be located the base and lower portions of the walls of a similar overlying container (indicated in some Figures at 1A) to provide nesting in the erection of the vertical column in known manner. Extending between the opposed side walls 3 and 4 are two base support means indicated at 8 and 9 which are located, one each, towards the longitudinally opposite ends of the container. The base support means 8 and 9 are constructed in an identical manner to each other and serve a similar purpose, for convenience therefore the means 9 need only be described.

The base support means 9 consists of two metal or plastics support rods or bars 10 and 11 each of which has a straight back portion 12 and leg portions 13. The support bar 10 has its leg portions 13 presenting bosses which are pivotally mounted at 14 in the respective side walls 3 and 4 so that the bar 10 can pivot about an axis extending through the pivots 14 for its back portion 12 to be positioned in a rebate 15 in the top edge of the end wall (as shown at the lefthand end of Figure 1) or to be accommodated in seatings 16 in the side walls so that its back portion 10 extends across the open top 7 (as shown at the righthand end of the container in Figure 1).

The support bar 11 is located within the container 1 at a lower level than the bar 10 and has the ends of its legs 13 presenting bosses which are pivotally mounted at 17 in the side walls 3 and 4. The bar 11 can be pivotted optionally so that its back portion 12 will lie on an upwardly directed internal shoulder 18 of the adjacent end wall (as shown for the bar 11 at the lefthand end of the container in Figure 1) or to be seated in rebates 19 so that the back portion 12 of the bar 11 extends across the width of the container parallel to and spaced from the end walls (as shown at the righthand end of the container in Figure 1).

With the two support bars 10 in their respectively associated seating 16 and the two support bars 11 seated in their respectively associated rebates 19 it will be seen, particularly from Figure 2 that the back portions 12 will overlie the base 2. Alternatively when the support bars 10 are pivotted for their back portions 12 to be seated in their respectively associated rebates 15 and when the back portions of the bars 11 are supported on their respectively associated shoulders 18, it will be seen from Figure 2 that the back portions of the respective support bars are out of overlying relationship with the base 2.

It will be apparent from Figures 1 and 2 that when the two support bars 10 are pivotted so that they are supported on the seatings 16 presented by upwardly directed shoulders on the side walls, their back portions 12 extend across the open top of the container in the general plane of that top opening so that a second similar container 1A can be column stacked with its base 2 standing on the back portions of the support bars 10. Such column stacking permits a major part of the container to be available for receiving goods to be stored or transported whilst alleviating the likelihood of such goods being damaged or crushed by loading from an overlying container in the erection of a column of containers.

By pivotting the support bars 10 so that they are accommodated in the rebates 15 and pivotting the two support bars 11 so that they are supported in the seatings 19 for their back portions 12 to overlie the base 2 as shown in Figure 2, a second similar container can be lowered through the open top of the underlying container 1 so that its base and lower parts of its walls are received within the underlying container until the base of the overlying container stands on the back portions 12 of the two support bars 11. In this latter condition the space available for the storage of goods within the underlying container between the base 2 of that container and the base of the overlying container which is supported by the bars 11 will be less than the previous storage space available for the two containers when column stacked; nevertheless this reduction in space may be adequate for certain purposes and may alleviate unnecessary waste of overall storage space which could result from column stacking.

If both the support bars 10 and the support bars 11 are pivotted so that their back portions 12 are out of overlying relationship with the base 2 with such back portions resting on the appropriate rebates 15 and shoulders 18, a second similar container 1A (as indicated in Figure 2) can be received within the open top of the container 1 and lowered to effect nesting in a deep condition. In this latter condition the base indicated at 2A of the upper container is at the closest spacing from the base 2 of the underlying container and therefore the underlying container 1 has less space available for the storage of contents than the space which is available when the upper container is supported in a relatively shallow nested condition. The maximum depth to which the upper container may be received within the underlying container may be determined in conventional manner, for example by an external flange or rib 1C on the upper container 1A abutting the upper rim around the open top of the underlying container or by the base of the upper container abutting an internal shoulder presented by the walls of the underlying container.

To provide the required nesting the upstanding walls 3 to 6 of the container are tapered or splayed to converge as they approach the base 2. In the embodiment shown in Figures 1 and 2 the walls are shown with a stepped configuration to provide appropriate clearance for nesting and also to ensure that there is adequate space available for the back portion 12 of the support bar 11 (as shown ghosted at 12 in Figure 2) to be positioned out of overlying relationship with the base 2. With the stepped wall and support bar arrangement shown in Figure 2, two containers can be assembled as a vertical column in any one of a deep nested, shallow nested or column stacked conditions with approximately one third of the depth of the container walls separating one condition from another.

Although the base support means 8 and 9 in the embodiment of Figures 1 and 2 is described as a U-shaped bar, it is to be realised that other forms are possible, for example the base support means may be in the form of a bar-like component such as a bail arm or a flap. Where the base support means is in the form of a flap which replaces either or both of the support bars 10 and 11, it will be appreciated by those skilled in the art that the pivotal positions 14 and 17 of the flaps may be moved from those positions shown, for example so that the flaps may extend substantially upwardly from their pivot position within the end walls to be out of overlying relationship with the base 2 or even, in the case of the support bar 10 being replaced by a flap, for that flap to hang from its pivotal mounting on the outside of the end wall to be out of overlying relationship with the base 2.

In the second embodiment, a basic arrangement of which is diagrammatically illustrated in Figure 3, each of the base support means 8 and 9 is in the form of a single U-shaped support rod or bar 20 having a straight back portion 21 which extends between the opposed side walls 3 and 4 of the container and leg portions 22. For convenience in Figures 3 to 12 only the base support means 9 has been shown and it will be appreciated that the base support means 8 towards the opposite end of the container will have a similar but mirror image arrangement to that shown. Also only one end of the support bar 20 has been shown and it will be appreciated that the opposite end of the support bar is arranged on the side wall 4 in a similar manner to that shown on the side wall 3. The leg portions 22 of the support bar 20 have bosses 23 by which they are pivotally mounted on the respective side walls for rotation about a common axis through the two pivots so that the bar can be selectively pivotted. As indicated by arrow B in Figure 3, the bar 20 can be pivotted for the back portion 21 to be displaceable between a high state (shown at H in Figure 3) in which the back portion overlies the base 2, a low state (indicated in ghost at L in Figure 3) in which the back portion 21 overlies the base 2 but is nearer to the base 2 than when in the high state H and a third or intermediate state (indicated in ghost at I in Figure 3) through which the back portion 21 passes in moving between states L and H and in which state I the back portion 21 is out of overlying relationship with the base 2. The support bar 20 is supported in its high state H by abutment of the bar on a seating 24 extending from a channel 24A in which the leg portions 22 of the bar are conveniently accommodated in the high state. The support bar 20 is supported in its low state L by an upwardly directed shoulder or seating 25 in the side wall. The support bar 20 is retained in its intermediate state I by abutment with a stop 26 in the form of a small flange or shoulder on the end wall 6. In moving from the high to the low state H to L, the back portion 21 of the support bar abuts the stop 26 which prevents the support bar from falling into its low state L; however the material, usually plastics, of the stop 26 or the end wall 6 or the back portion 21 of the support bar is sufficiently flexible so that manual downward pressure on the support bar 20 will resiliently displace the bar back portion and stop 26 over each other to move the support

bar into its low position L.

In Figure 4 the support bar 20 is shown in its high state L and with the two support bars so positioned, a second similar container 1A can be column stacked with its base supported on the back portions 21 of the bars as shown.

In Figure 5 the support bar 20 is shown pivotted to its intermediate state I so that its back portion 21 abuts the stop 26 to be out of overlying relationship with the base 2. With this arrangement a second similar container 1A can be received within the open top 7 in a deep nested condition similar to that previously discussed in connection with the first embodiment.

In Figure 6 the support bar 22 is shown pivotted passed the stop 26 into its low state L where the back portion 21 is supported by the seatings 25 to overlie the base 2. With both support bars 20 for the two support bar means 8 and 9 in their low state a second similar container 1A can be received within the open top 7 of an underlying container so that the base 2A of the overlying container stands on the back portions 21 of the support bars. Consequently the two containers will be in a shallow nested condition similar to that previously discussed in connection with the first embodiment.

In accordance with conventional practice, the containers in the above described embodiments when column stacked or in either of their nested conditions with a similar container will usually be arranged so that the overlying bases of the two containers are in parallel relationship. Also channels or rebates will normally be provided on the underside face of the base to receive and provide firm engagement with the back portions on the support bars of a similar underlying container on which the base may sit.

In the modification for the container of the second embodiment as shown in Figure 7 which illustrates the support bar 20 in its intermediate state I (similar to Figure 5) the pivotal bosses 23 of the leg portions 22 of the support bar are slidably mounted in upwardly extending elongated tracks in the form of slots (indicated at 50) in the opposed side walls 3 and 4. The pivotal mountings 23 are slidably displaceable along the slots 50, conveniently by manually lifting the leg portions 22, so that the back portion 21 of the support bar will clear the stop 26 and the support bar can fall into its low state L against the seating 25. By providing such a displaceable mounting 23 it will be appreciated that there is no requirement for the stop 26 to flex relative to the support bar 20. Preferably in each of the three states H, I and L of the support bar 20 the boss 23 is located at the same position in its slot 50, usually at the bottom end of the slot as shown in Figure 7.

In a further modification of the second embodiment of the container as shown in Figures 8 and 9, the support bar 20 has the bosses 23 of its leg portions 22 pivotally and slidably mounted in tracks provided by slots 60 in the opposed side walls 3 and 4. The slots 60 are elongated substantially parallel with the base 2 and the pivotal bosses 23 at the ends of the leg portions 22 are displaceable along the slots 60. Figure 9 illustrates the three positions into which the support bar 20 can be pivotally and optionally adjusted; for convenience the support bar 20 is shown in complete lines in each of the three positions and they consist of the high state H, the low state L and the third state I. The modification shown in Figures 8 and 9 differs from the arrangement shown in Figures 3 to 7 in that during its pivotal movement the support bar 20 is displaceable between its third state I and the low state L effectively through its high state H. This is best appreciated from Figure 9 where it will be seen that in its third state I the support bar 20 abuts the support shoulder 26 on the end wall to permit deep nesting. By pivotal movement, the support bar 20 can be displaced from the state I selectively into either the high state H or the low state L for column stacking or shallow nesting respectively. In the high state H the support bar back portion 21 is supported on the seating 24 of the side walls. To move the support bar from its high state H into its low state L, the legs 22 can be pivotted upwardly for the back portion 21 to clear the seatings 24 and the pivotal mountings 23 displaced along the slot 60 sufficiently for the back portion 21 to move out of overlying engagement with the seatings 24 so that the support bar can be allowed to fall on to the seating 25 and adopt the low state L. The leg portions 22 of the support bar are shown cranked in Figure 9 and also the slot 60 is shown substantially straight and parallel to the base of the container but it will be appreciated that these characteristics and similar characteristics shown in Figure 7 can be varied as appropriate for a particular design of container. From Figure 9 it will be seen that in each of the three states H, I and L of the support bar 20, the boss 23 is located at substantially the same position in the slot 60, usually seated at one end of that slot to facilitate its positioning.

In a still further modification of the second embodiment as shown in Figure 10 the bosses 23 of the leg portions 22 on the support bar 20 are pivotally and slidably mounted in tracks formed by slots 70 in the opposed side walls 3 and 4. In Figure 10 the three positions into which the support bar 20 can be pivotally and optionally adjusted are shown consisting of the high state H, the low state L and the third state I. The modification shown in Figure 10 differs from either of the arrangements shown in Figure 5 or Figure 7 in that during its pivotal movement the support bar 20 is displaceable between its third state I and its high state H effectively through its low state L. In the drawing the support bar 20 is shown abutting the shoulder 26 on the end wall 6 to permit deep nesting. By slidably displacing the pivotal boss 23 along the slot 70, the back portion 21 of the support bar can clear the shoulder 26 and drop into the seating 25 at the low state. In this latter state the support bar may have to be manually press fitted into engagement with its seating 25 to provide a firm fit therewith or may merely fall into that seating as determined by the profile of the slot 70 and that of the seating 25. The support bar may be moved directly from

its low state H for shallow nesting into its high state H for column stacking by pivotal movement of the bar and appropriate displacement of its pivotal mountings 23 along the slots 70 to locate the back portion 21 of the support bar over the seating 24 and then allowing the support bar to fall on to that seating. It will be appreciated from Figure 10 that, similarly to the arrangements in Figures 5 and 9, the support bar can be pivotted directly from its high state H to its third state I.

Figure 11 shows a modification of the arrangement in Figure 9 whereby the pivotal bosses 23 are slidably mounted in L-shaped slots 60A. An end 60B of the L-shaped slot 60A provides a seating within which the respective boss 23 is located firmly when the support bar 20 is in each of its H, I or L states. When the bosses 23 are in the respective seatings 60B of the container side walls, the support bar 20 can be pivotted directly between its H and I states. To effect pivotal movement of the support bar from either its H or I state to its L state, or from its L state to either its H or I state, it is necessary for the bosses 23 to be displaced temporarily and reciprocated from their seatings 60B, along the respective slots 60A and then back to their seatings 60B. To facilitate displacement of the support bar during its movement between the L state and the I state, the legs 22 are cranked or otherwise shaped to present cam surfaces which react against appropriately profiled cam surfaces presented by the side walls 3 and 4 so that the aforementioned reaction provides guidance for the bar back portion 21 under manually applied pressure to move towards and into the seating 25 of the L state or onto the stop 26 of the I state as the case may be. It is considered particularly advantageous for the support bar 20 to be manually displaceable easily and automatically during pivotal movement from its L state to its I state; the reason for this is that following use of several containers having their support bars in the L state for shallow nesting, the bars of the containers may be readjusted simply, quickly and by inexperienced handlers from the L state to the I state for deep nesting of the empty containers as a stack to facilitate their transport or storage. With this in mind, in Figure 11 the legs 22 present convexly curved cam faces 22A which are intended to react against concavely curved cam faces 100 presented by the container side walls 3 and 4 respectively. As the bar back portion is gripped and raised from the seating 25 in the L state, the bosses 23 are lifted from their seatings 60B and displaced along the slots 60A to the position indicated at 23' in Figure 11 so that sufficient clearance is provided for the bar back portion 21 whereby the bar 20 can pivot on its bosses 23' as indicated at 22' in the direction of arrow D for the legs 22 to approach the stop 26. During this latter movement and rotation of the bar shown at 22' clockwise about its bosses 23' in Figure 11, the cam face 22A on each of the legs 22 abuts the cam face 100 presented on the associated side wall 3 or 4 of the container and continued rotation of the support bar 22 in the aforementioned clockwise direction causes the cam faces 22A of the bar legs to slide over the respective cam faces 100 of the side walls and this sliding abutment between the cam faces causes the bosses on the support bar legs to be displaced automatically from the position indicated at 23' along the slot 60A to be accommodated in the seating 60B as the bar back portion 21 is promoted automatically to seat on the stop 26. To facilitate the location of the boss 23 in the seating 60B, the end of the slot adjacent to the seat 60B is profiled to guide the boss 23 smoothly into the seating 60B as the boss approaches that seating.

Figure 12 shows a pivotal mounting arrangement for the support bar 20 which provides similar characteristics to the arrangement as above described with reference to Figure 11 but in which the legs 22 of the support bar are in the form of plate-like sections from which extend the bosses 23 and the bar back portion 21 as shown in Figure 13 and which sections are in the form of cam plates as indicated in Figure 14 so that the side edges thereof present cam faces of predetermined profile which are intended to facilitate and promote displacement of the support bar during its pivotal movement from the L state to the I state. More particularly the cam plate-like section of each leg 22 presents a smoothly curved, generally convex rear cam face 22A' (which is similar to the cam face 22A of Figure 11) and a smoothly curved, generally convex, front cam face 22B. With the particular design of support bar mounting shown in Figure 12 both cam faces 22A' and 22B are intended to react with cam faces presented on the respective side wall of the container to facilitate a simple and smooth transition of the support bar during its movement from state L to state I in a similar manner to that described with reference to Figure 11. In Figure 12 as the bar back portion 21 is raised from the seating 25 in the L state during its movement towards the I state, the front cam face 22B abuts and slides over a cam face 101 presented by the container side wall and the reaction between the cam faces 22B and 101 causes the boss 23 to be lifted smoothly from its seating 60B in the slot 60A and that boss to be displaced along the slot 60A to a position indicated at 23' in Figure 12. In this latter position 23' there is adequate clearance of the bar back portion 21 from the seating 25 for the support bar to be pivotted clockwise in Figure 12 about the bosses 23' to approach the I state. As the cam shaped sections of the legs 22 are rotated clockwise as aforementioned about the bosses 23', the rear cam faces 22A' of those sections move into abutment with and slide over a cam face 102 presented by the respective side walls. During this latter sliding movement the reaction between the cam faces 22A' and 102 causes the respective bosses to be displaced smoothly from the position indicated at 23' towards and into the respective slot seatings 60B as the bar back portion 21 is promoted to engage on the stop 26 in its I state.

It will, of course, be appreciated that in Figures 11 and 12 various positions for the support bar legs, bar back portion and bosses have been indicated in ghost

form or solid lines and that the slot 60A and cam faces presented by the side walls of the container have been illustrated in ghost form as considered most convenient and appropriate for descriptive purposes.

As previously mentioned, the support bar or rod 20 will usually be formed of metal or plastics. The support bar shown in Figure 12 is particularly suitable for moulding in plastics, possibly with glass reinforcement, for convenience of economically forming the cam shape plate-like sections for the legs 22.

In each of the base support arrangements shown in Figures 9, 11 and 12 it will be seen that the support component presented by the bar 20 is maintained in its high state H by abutment with the side walls of the container in the seating 24 and is movable passed the seating 24 by displacement of the support bar relative to the seating as the bosses 23 slide along the slots 60 and 60A to permit the support bar to be adjusted between the state I and the low state L, in effect by pivotal movement through the high state H. Furthermore, in each of the states H, L and I of the arrangement shown in Figures 9, 11 and 12, the pivotal bosses 23 are located in the same position in their respective slots.

It will be realised that the base support means 8 and 9 for a container can be a combination of the arrangements described and illustrated for the two embodiments.

## Claims

1. An open topped container comprising a base, opposed side walls extending upwardly from the base, and pivotally mounted base support means extending between the side walls, the base support means being selectively pivotal to a first position of adjustment in which they are out of overlying relationship with the base to provide clearance whereby a first of two similar containers can be received through the open top of the second container with its base support means in the first position to be nested in a deep condition in the second container, a second position of adjustment in which the base support means are supported in overlying relationship with the base whereby the said first container can be column stacked with its base supported on the base support means of the said second container with its base support means in the second position, and a third position of adjustment in which the base support means are supported in overlying relationship with the base whereby the said first container can be nested in a shallow condition in the said second container with the base of the first container supported on the base support means of the second container in the third position and in which shallow nested condition the base of the first container is spaced from the base of the second container to a greater extent than said spacing when said containers are in the deep nested condition and to a lesser extent than said spacing when said containers are column stacked.

2. A container as claimed in claim 1 which is arranged so that when in a deep nested, shallow nested or column stacked condition with a second similar container has its base substantially parallel with the base of the second container.

3. A container as claimed in either claim 1 or claim 2 wherein two said base support means are provided which are located one towards each end of the opposed side walls.

4. A container as claimed in any one of the preceding claims in which the base support means comprises at least one substantially U-shaped support bar having a back portion which extends between the opposed side walls and leg portions which are mounted for pivotal movement about an axis on the side walls so that the support bar can be pivotted about said axis in effecting selective adjustment of the support bar means.

5. A container as claimed in any one of the preceding claims in which the base support means comprises at least one flap which extends between the opposed side walls and is mounted for pivotal movement on walls of the container in effecting selective adjustment of the support bar means.

6. A container as claimed in any one of the preceding claims in which the or a base support means comprises an upper support component and a lower support component which are pivotally mounted on the walls of the container to be independently pivotal between a first state in which they are supported to overlie the base and a second state in which they are out of overlying relationship with the base and which upper and lower support components are arranged so that said first position of adjustment is provided when both said upper and lower support components are in their second state, said second position of adjustment is provided when the upper support component is in its first state for that support component to support the base of a second container in column stacking, and said third position of adjustment is provided when the upper support component is in its second state and the lower support component is in its first state for the lower support component to support the base of a second container in shallow nesting.

7. A container as claimed in any one of the preceding claims in which the or a base support means comprises a single support component pivotally mounted on the opposed side walls and selectively

pivotal to a high state corresponding to said second position of adjustment, a low state corresponding to said third position of adjustment and a third state corresponding to said first position of adjustment.

8. A container as claimed in claim 7 in which the single support component is maintained in said third state by abutment with a wall of the container and is movable passed said abutment by relative displacement between said abutment and the component to permit the component to be adjustable between the high state and the low state through the third state.

9. A container as claimed in claim 7 in which the single support component is maintained in said high state by abutment with a wall of the container and is movable passed said abutment by relative displacement between said abutment and the component to permit the component to be adjustable between the third state and the low state through the high state.

10. A container as claimed in claim 7 in which the single support component is maintained in its third state by abutment with a wall of the container and is movable passed said abutment by relative displacement between said abutment and the component to permit the component to be adjustable between the third state and the high state through the low state.

11. A container as claimed in claim 10 in which the component is press fitted to engage with, and be retained by, a seating in its low state.

12. A container as claimed in any one of claims 8 to 11 in which the component is movable passed the abutment by flexure of at least one of the component and the abutment.

13. A container as claimed in any one of claims 7 to 12 in which the pivotal mounting of the component is displaceable relative to the side walls to permit said component to be movable between at least two of said first, second and third positions.

14. A container as claimed in claim 13 in which ends of the support component are slidable in respective tracks (preferably slots) in the side walls to permit said displacement.

15. A container as claimed in claim 14 in which in each of said high, low and third states of the support component said ends of the support component are at substantially the same position in the respective tracks.

16. A container as claimed in claim 15 in which each of said tracks includes a seating within which the respective end of the support component is received when the support component is in each of its high, low and third states.

17. A container as claimed in any one of claims 14 to 16 in which during adjustment of the support component from one state to another state, said support component abuts the side walls through cam faces remote from said tracks and during sliding movement of the ends of the support component in the respective tracks to a predetermined position, said abutment through the cam faces promotes the support component to become located in at least one of its high, low or third states.

18. A container as claimed in claim 17 when appendant to either claim 15 or claim 16 in which said predetermined position is the said same position for the ends of the support component in the tracks in each of the high, low and third states.

19. A container as claimed in either claim 17 or claim 18 when appendant to claim 4 in which the side walls of the container present cam faces remote from the tracks and with which cam faces the leg portions of the support bar slidably abut to provide said promotion of the support component.

20. A container as claimed in claim 19 or in either claim 17 or claim 18 when appendant to claim 4 in which the leg portions of the support bar present cam faces which slidably abut the side walls of the container remote from the tracks to provide said promotion of the support component.

21. A container as claimed in any one of claims 17 to 20 in which the cam faces are arranged to promote location of the support component in the third state during displacement of the support component from the low state to the third state.

22. A container as claimed in any one of claims 7 to 21 in which at least one end wall is provided that extends between the opposed side walls and in its third state the support component abuts the end wall.

23. A container as claimed in any one of the preceding claims in which the base support means is supported to be maintained in its second and third positions of adjustment by abutment on shoulders or seatings presented by walls of the container.

24. A container as claimed in any one of the preceding claims in which the base support means comprises a plastics moulding.

FIG. 1.

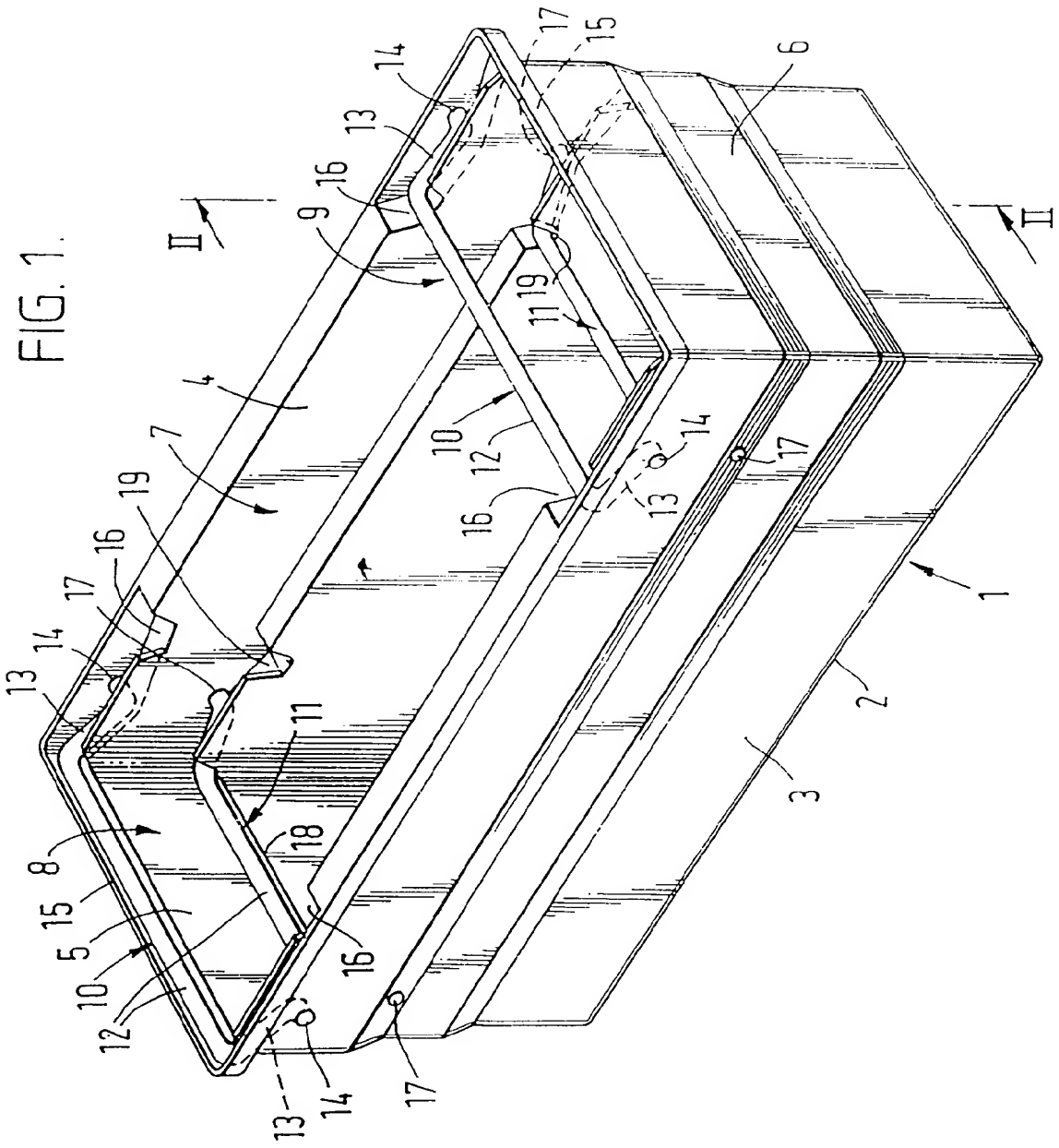

FIG. 2.

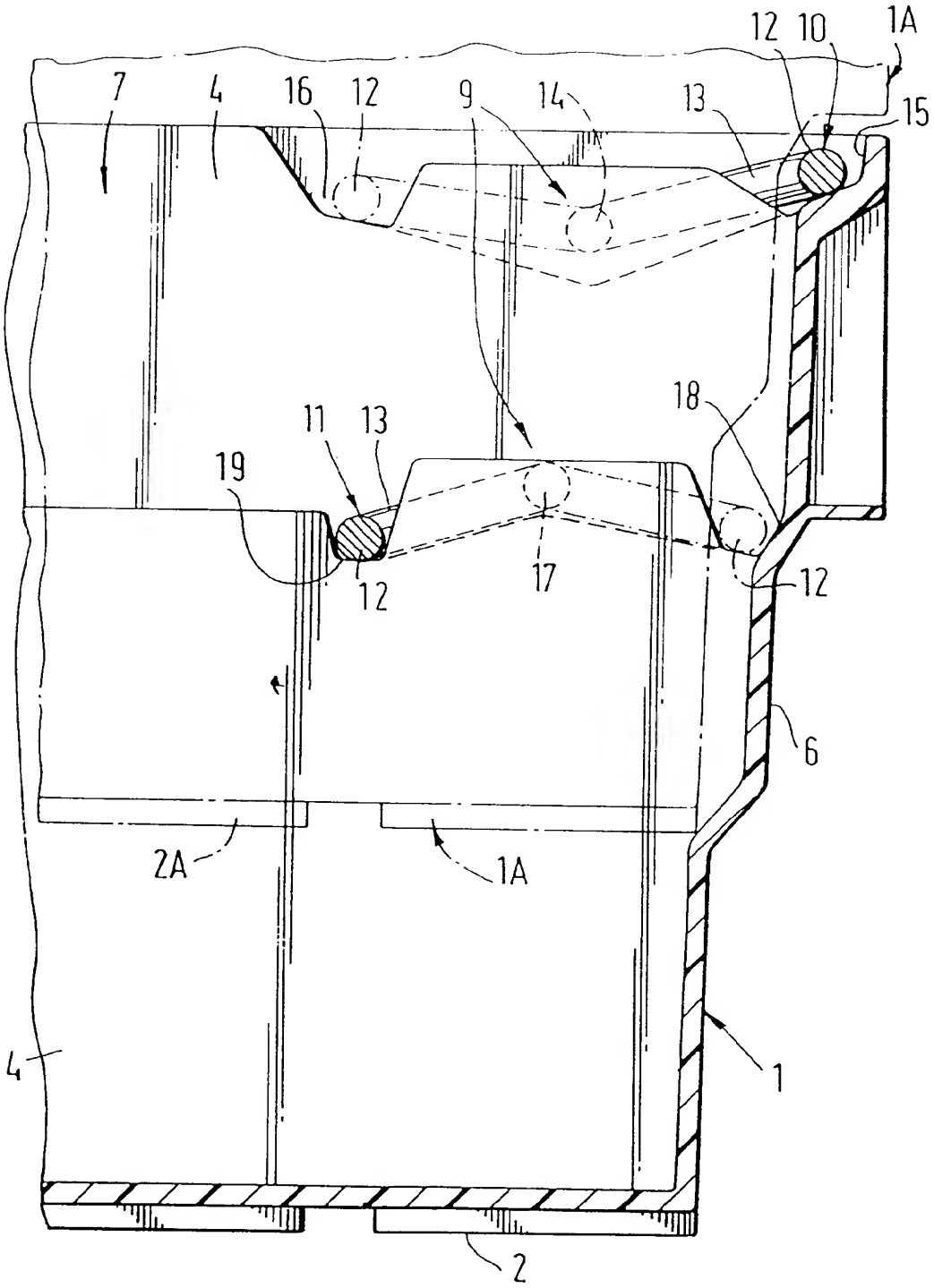

FIG. 3.

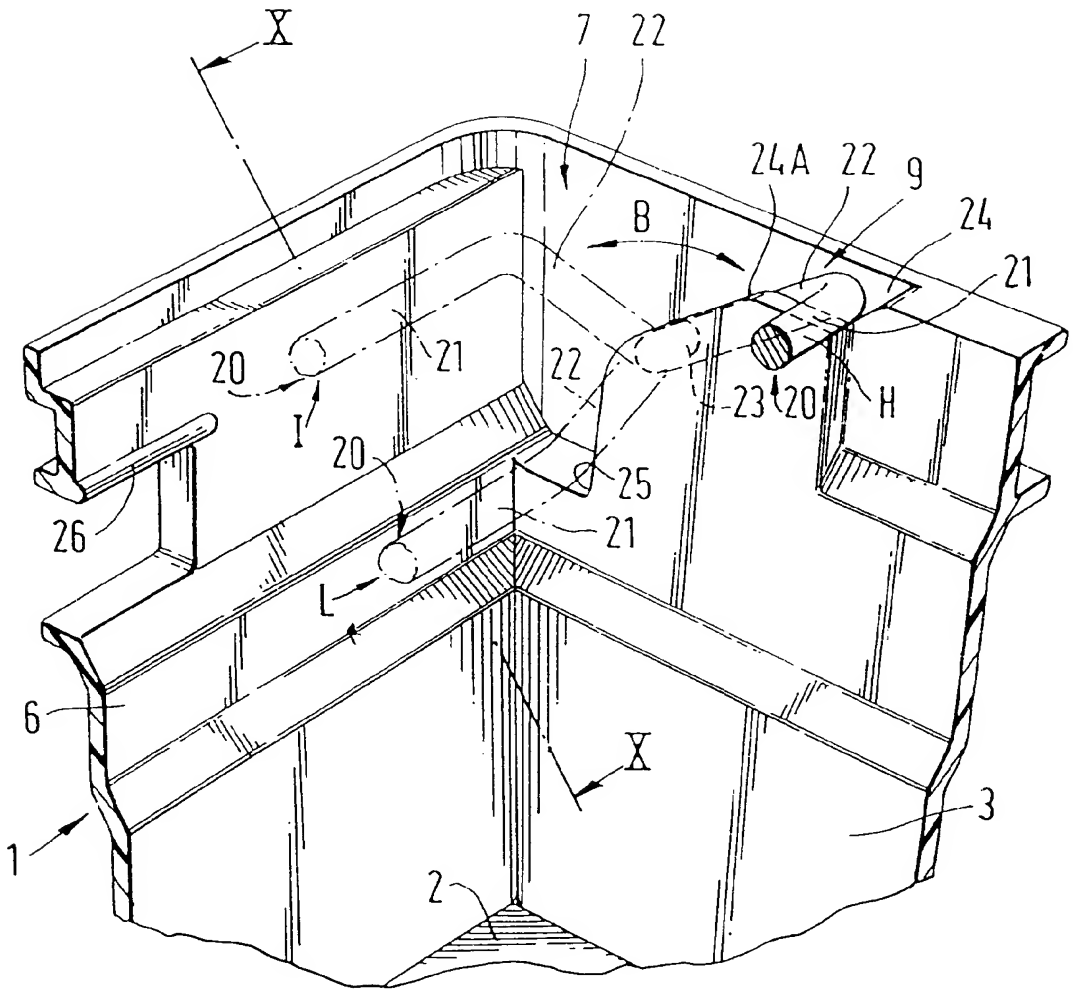

FIG. 4.

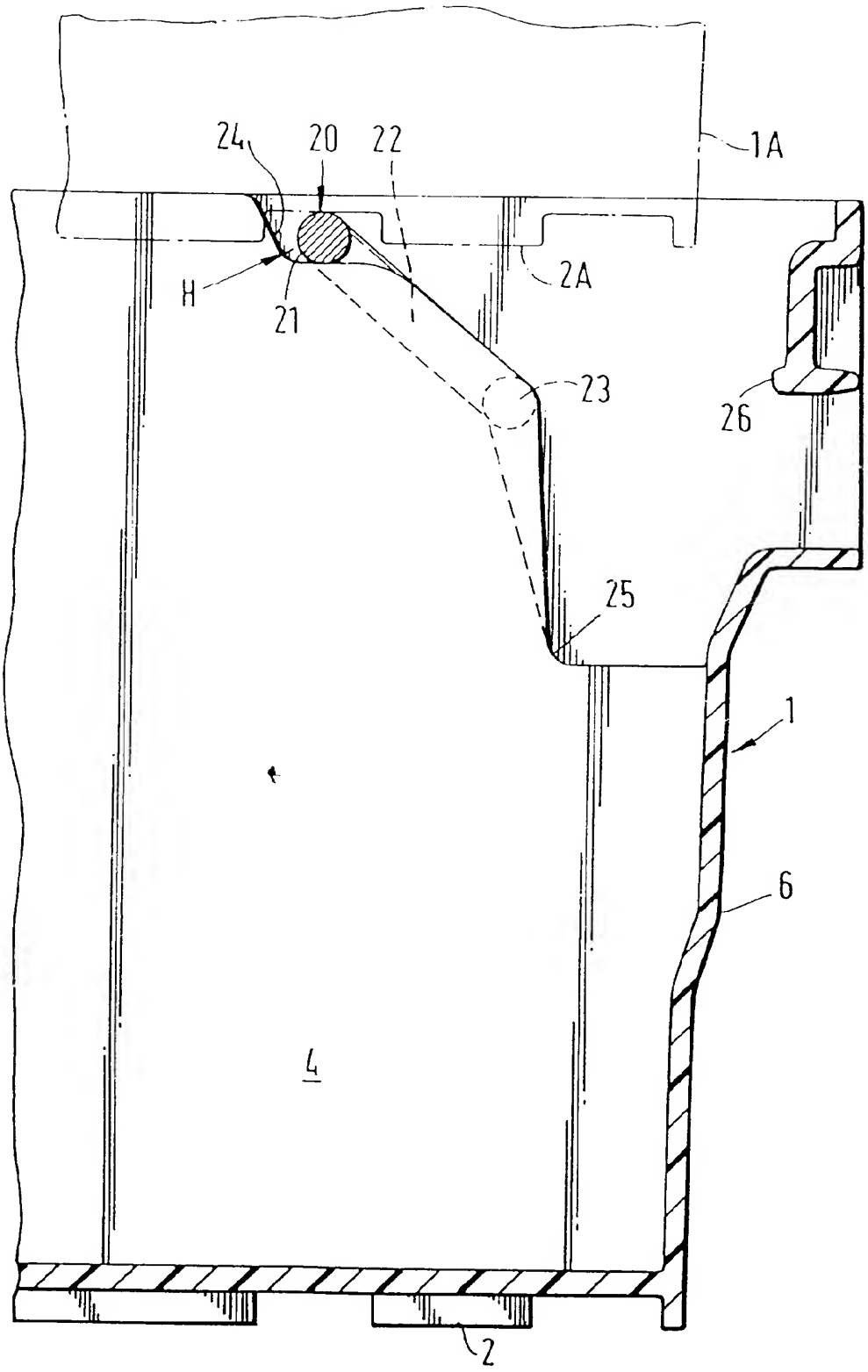

FIG. 5.

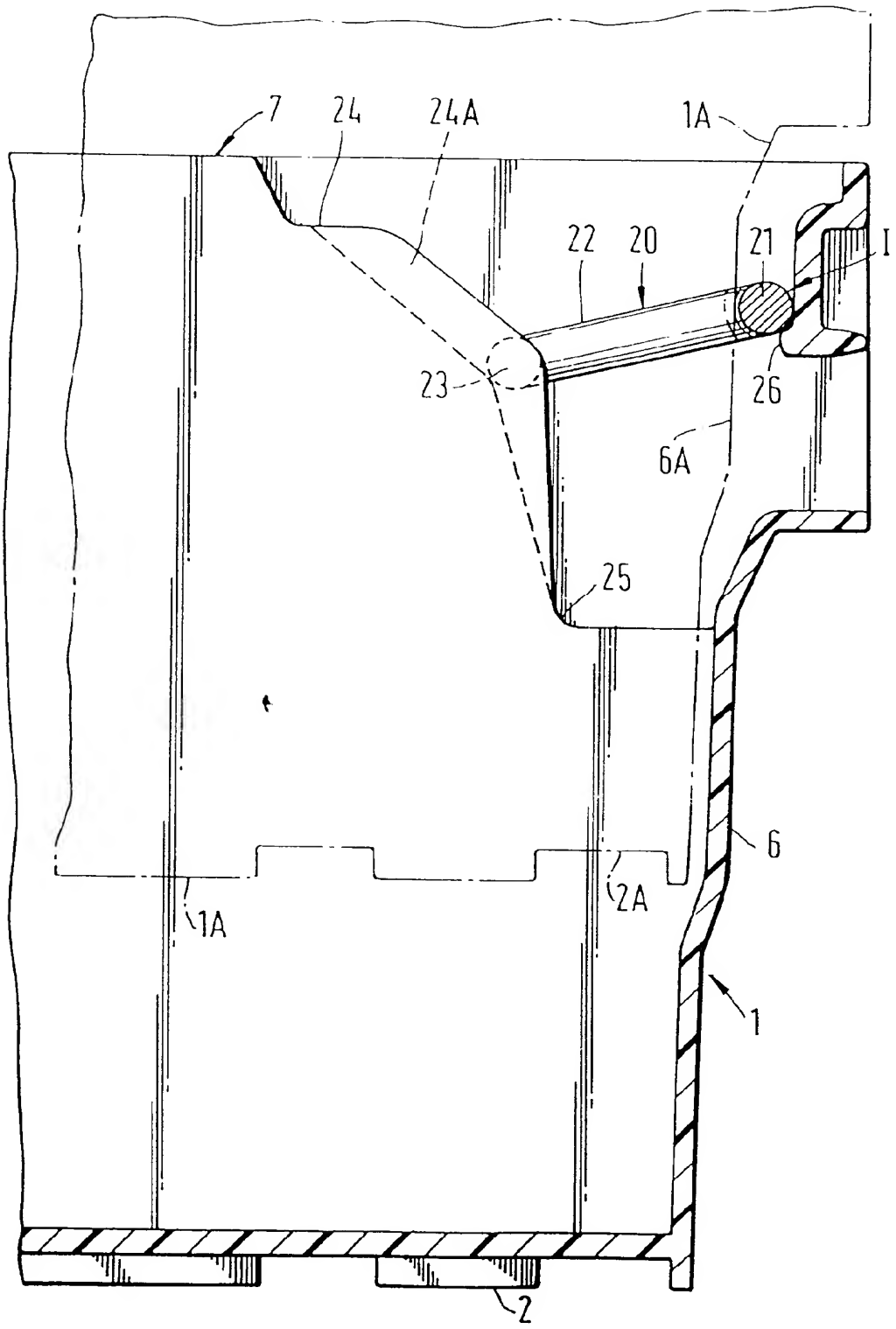

FIG. 6.

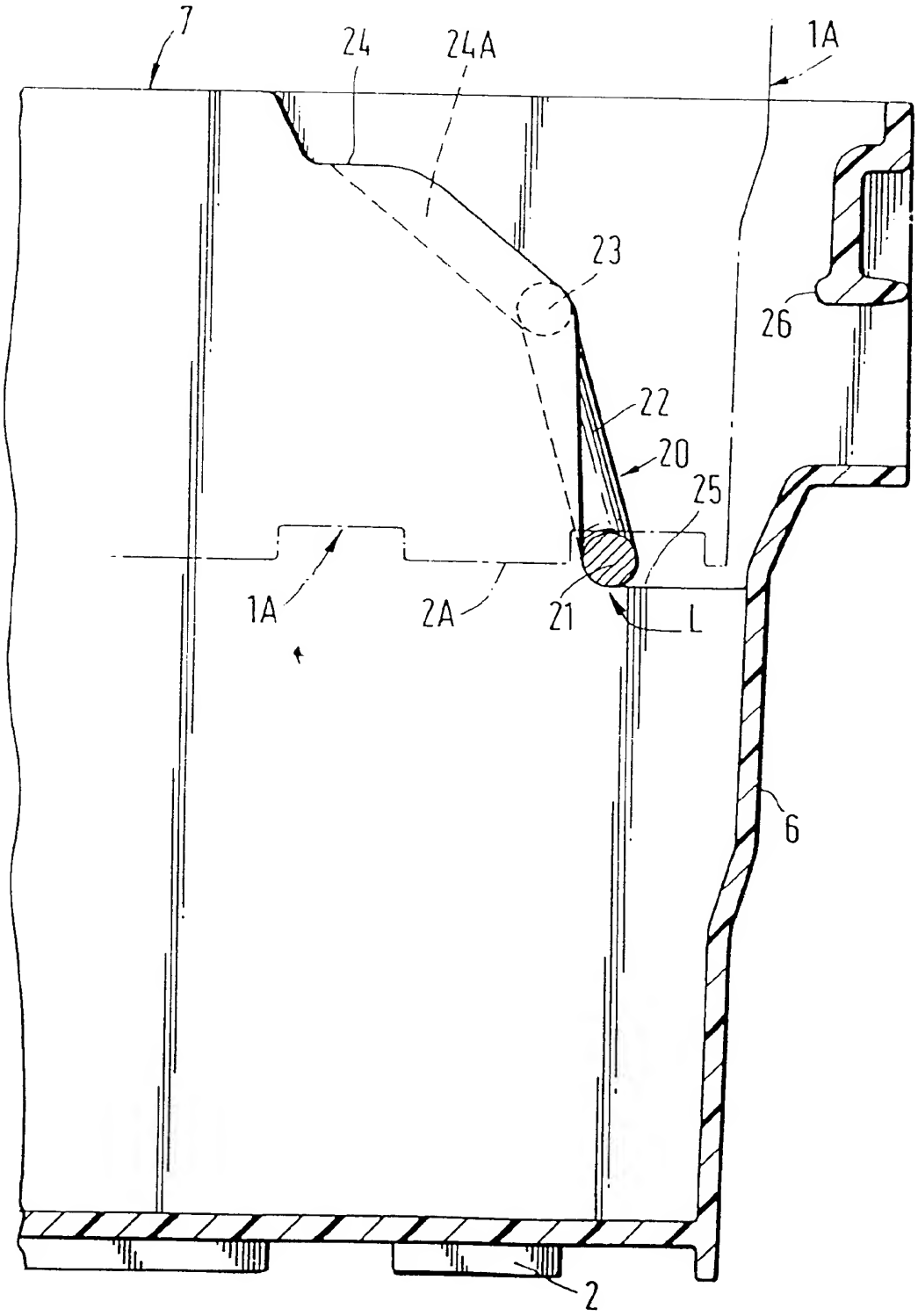

FIG. 7.

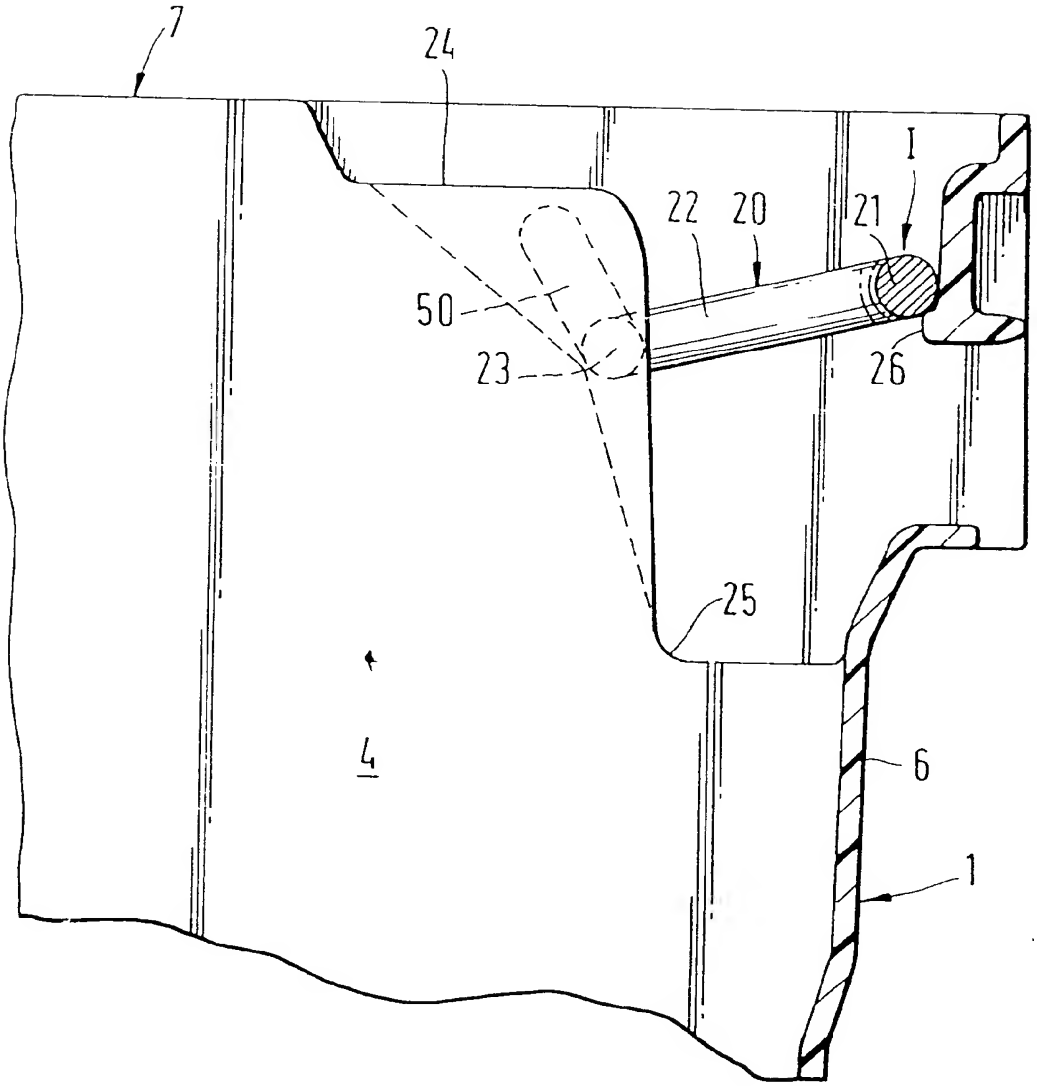

FIG. 8.

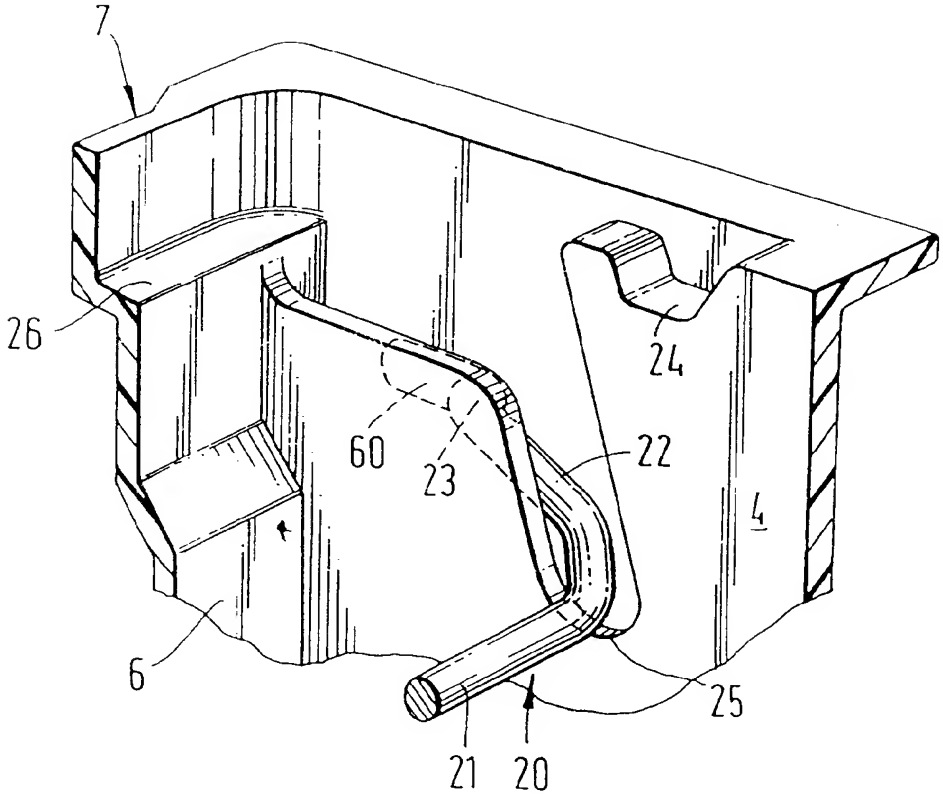

FIG.9.

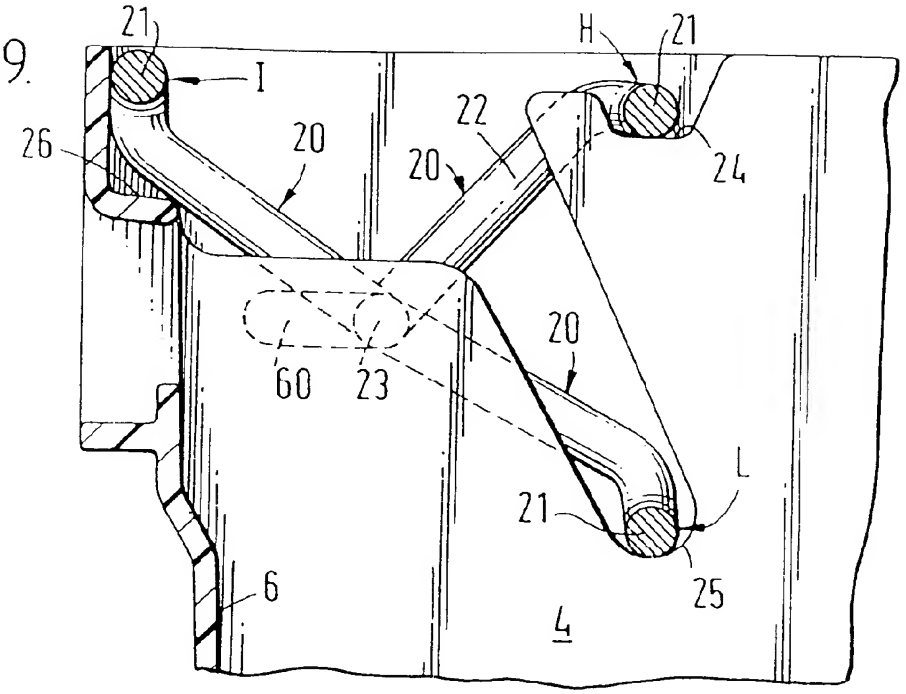
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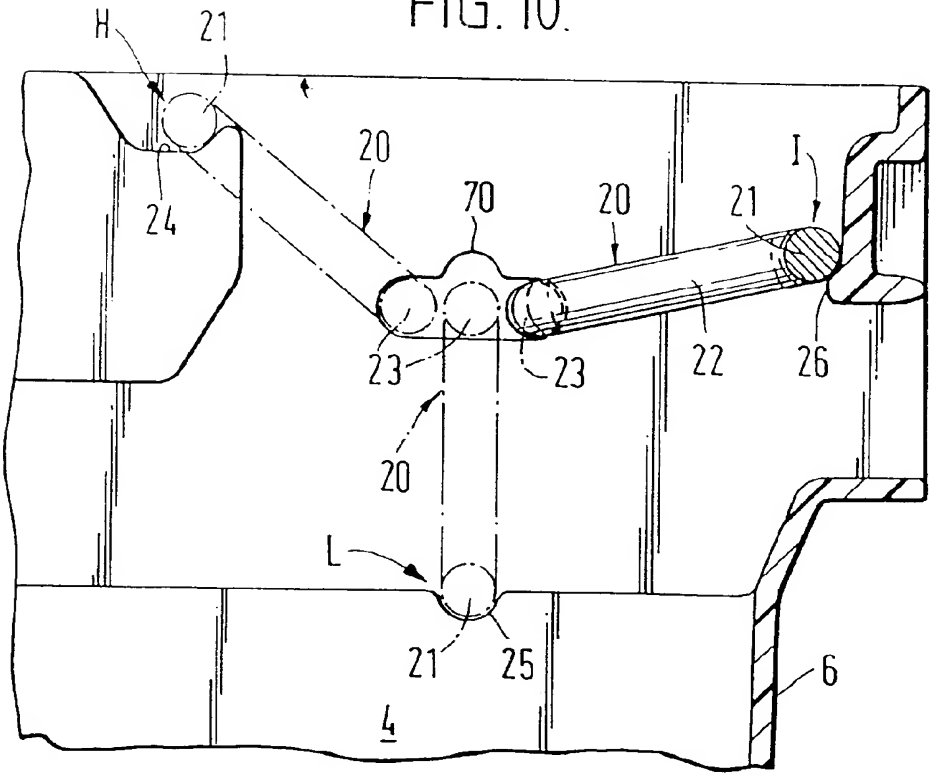
FIG.10.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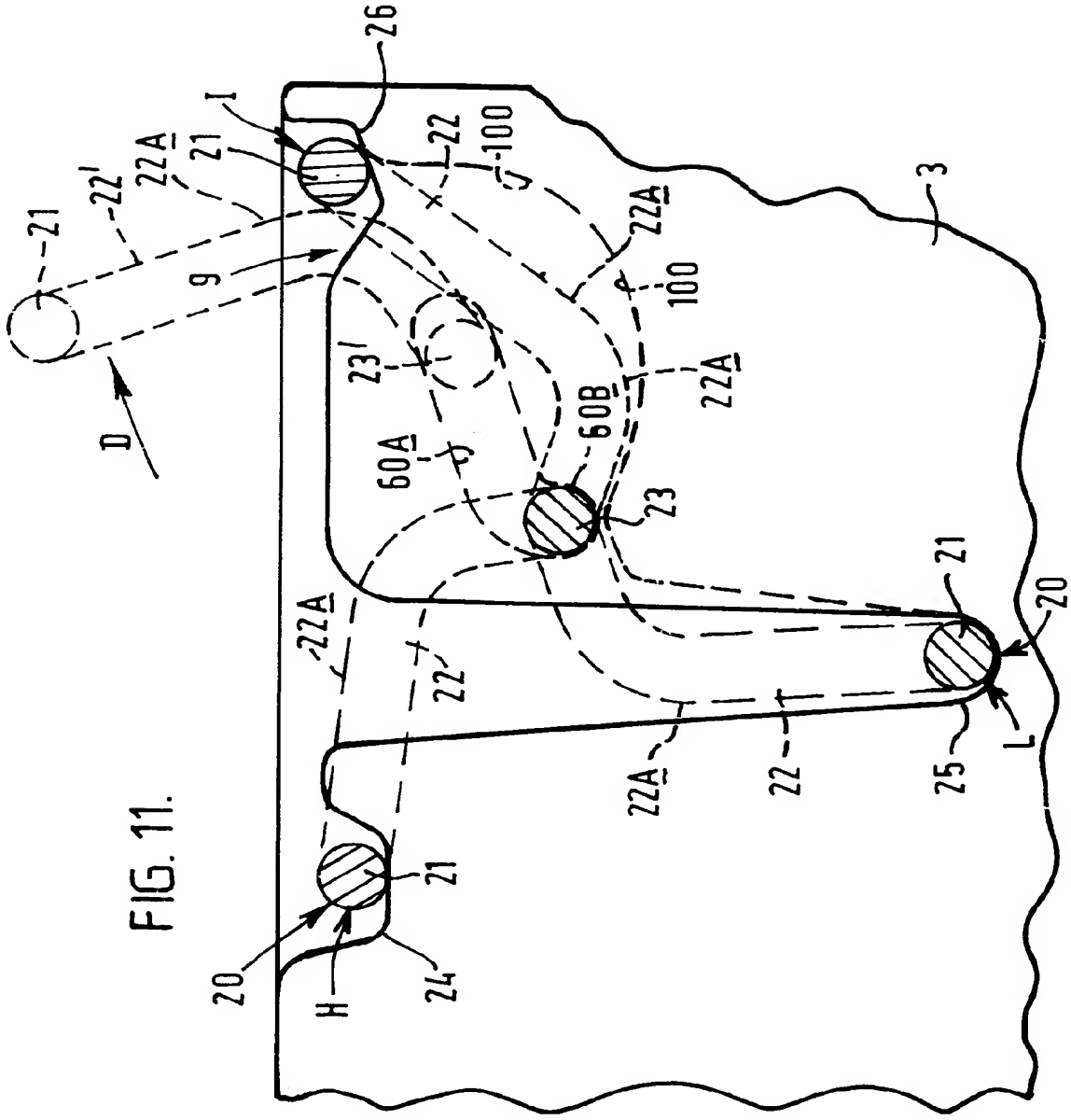
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FIG. 11.

FIG. 12.

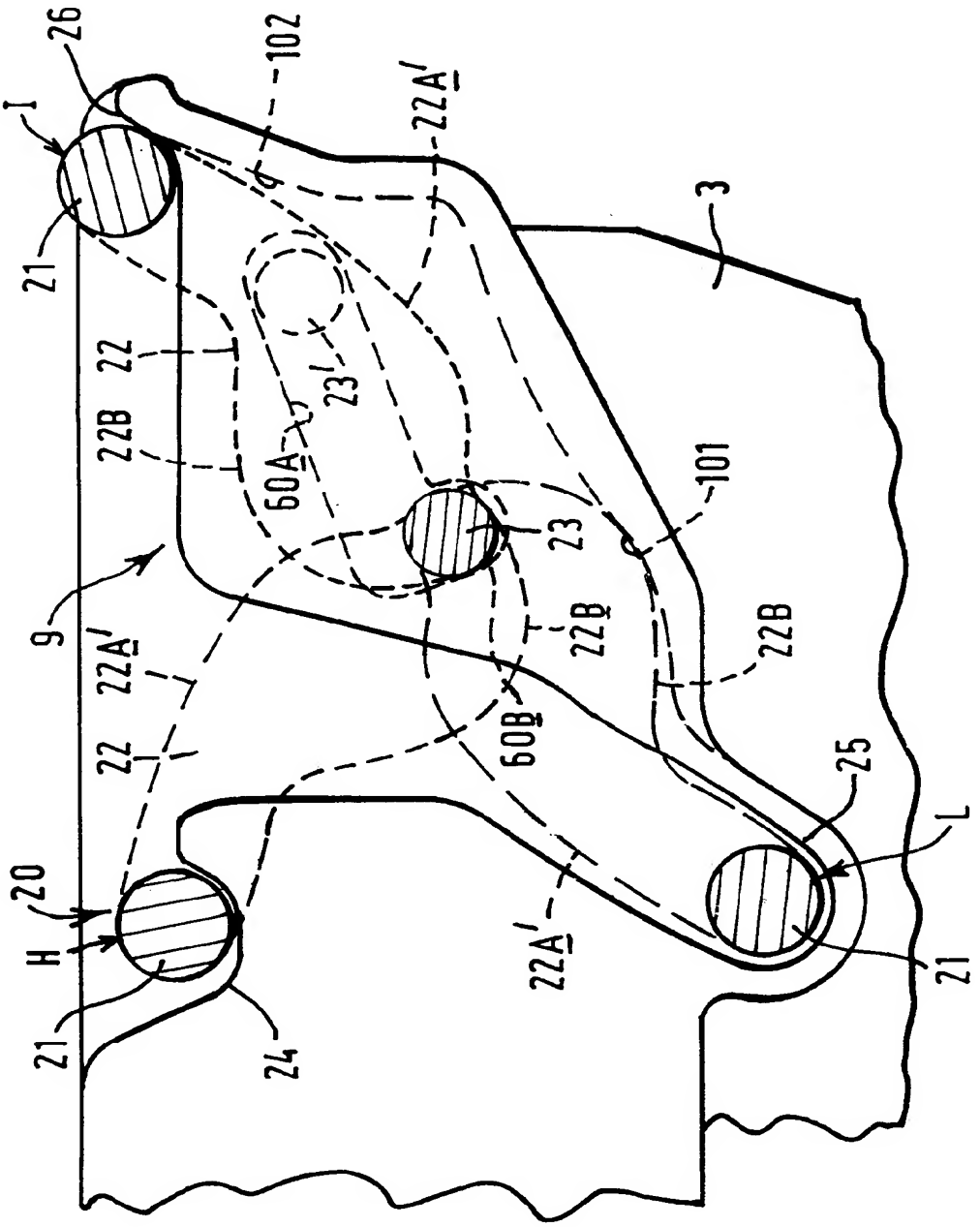
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FIG. 13.

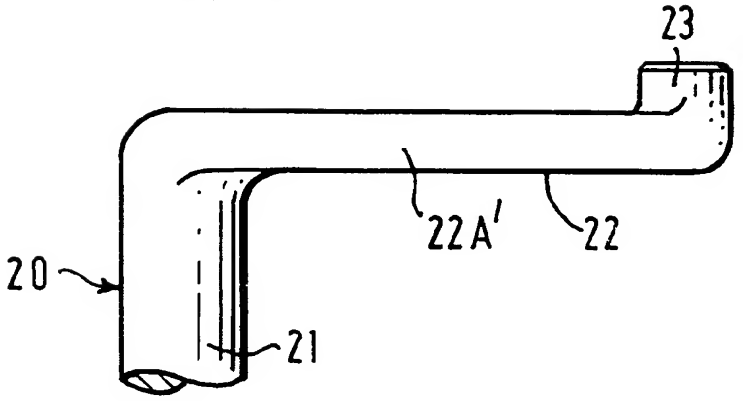
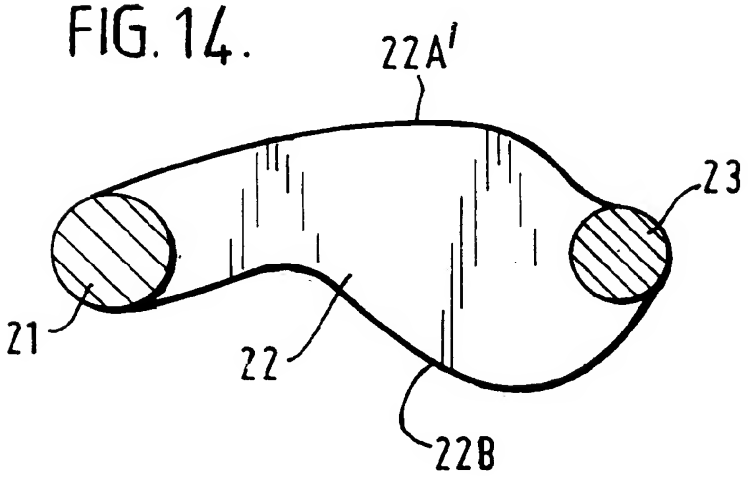



FIG. 14.



European Patent Office

# EUROPEAN SEARCH REPORT

Application Number
EP 95 11 4080

## DOCUMENTS CONSIDERED TO BE RELEVANT

| Category | Citation of document with indication, where appropriate, of relevant passages | Relevant to claim | CLASSIFICATION OF THE APPLICATION (Int.Cl.5) |
|---|---|---|---|
| X<br>Y | GB-A-2 104 486 (PINCNEY MOULDED PLASTICS)<br>* the whole document * | 1-4, 7-16, 22-31<br>5 | B65D21/06 |
| Y | US-A-2 765 099 (J. LIVELY) 2 October 1956<br>* column 2, line 24 - line 33; figures 1-3 * | 5 | |
| X<br>A | US-A-4 573 577 (D. MILLER)<br>* column 3, line 56 - column 4, line 68; figures 4-7 * | 1-4,7-16<br>6 | |
| X<br>A | GB-A-2 067 167 (ENGINEERED PLASTICS INC.)<br>* the whole document * | 1-4,7-16<br>6 | |
| A | DE-C-947 147 (FISCHER ECKERT CO.) 9 August 1956<br>* the whole document * | 1,17-21 | |
| | | | TECHNICAL FIELDS SEARCHED (Int.Cl.5)<br>B65D |

The present search report has been drawn up for all claims

| Place of search | Date of completion of the search | Examiner |
|---|---|---|
| THE HAGUE | 23 November 1995 | Pernice, C |

CATEGORY OF CITED DOCUMENTS

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E : earlier patent document, but published on, or after the filing date
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L : document cited for other reasons

& : member of the same patent family, corresponding document

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